LEGACY

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Innovative U of M program helps aides become teachers

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Collecting and preserving the stories of our newest residents

Mind games
A University of Minnesota engineer creates a way to move objects using brain waves, bringing new hope to people with brain or spinal cord injuries
DISPATCH OAK RIDGE, TENNESSEE

Keeping secrets

Scientists hired to work at the U.S. government’s facility in Oak Ridge, Tennessee—home of the infamous Manhattan Project during World War II—were sworn to secrecy. They knew very little about what they were actually working on until the atomic bombs they’d been developing were dropped on Japan in 1945, says U of M graduate student Emily Strasser, a Judd Fellow whose grandfather worked at Oak Ridge. “They knew only as much as they needed to know to do their jobs,” says Strasser, who traveled to Hiroshima, Japan, for the 70th anniversary of the bombing. See story on page 9.
SHOO, INFECTIONOUS DISEASES!

While many Minnesotans spent the summer swatting mosquitoes, School of Public Health student Ned Sherry went to Puerto Rico to get a little closer to them. Different types of mosquitoes transmit different diseases, so Sherry worked with the Centers for Disease Control and Prevention’s Dengue Branch to develop a blood test that could help to track, monitor, and squelch the spread of infectious diseases carried by these pests. Funding through the Dr. J. Arthur Myers Endowment for International Experience in Public Health made his travel possible.

How would the test work?

When a mosquito bites you, it injects its saliva into your body, which creates an immune response to the saliva in the same way that a vaccine would create an immune response for you—it creates antibodies to that saliva. The saliva antibodies, which create an immune response to the saliva in the mosquito that infects you. We thought that if we could figure out what types of mosquitoes are biting humans, we could essentially create a risk map of where those mosquitoes are and subsequently what types of diseases have potential to infect humans there.

What was your big take-away?

Recognizing the impact environment can have on disease spread—that’s the biggest lesson I took home with me. My primary interest is understanding how human health and animal health fit together and impact one another. It’s a field that has been branded as “one health” or “ecosystem health.”

Are you a mosquito expert now?

I wouldn’t call myself an expert, but it depends who I’m talking to. I’d say I’m knowledgeable. I did grow up in Minnesota.

Food for all

Food science major Ariel Garsow, ’17, is passionate about making sure everyone has enough nutritious food. “Once you see people who are hungry, you can’t just walk away,” she says. Last year, Garsow was one of three U of M students selected by Land O’Lakes Inc. for its Global Food Challenge Emerging Leaders for Food Security Fellowship. The experience included an internship at Land O’Lakes; travel to South Africa, Malawi, Botswana, and Zambia; participation in the World Food Prize Foundation Conference; and projects focused on reducing food waste and food insecurity.

“This program transformed my view of hunger and deepened my knowledge of how I can help,” says Garsow.

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“All about animals

In her second week at the U of M Crookston (UMC), lifelong animal lover DaKota Tilleras, ’17, learned to vaccinate sheep—and knew she’d found the right school. “I really enjoyed being able to be hands-on right off the bat,” she says.

An animal science major from Hastings, Minnesota, Tilleras volunteers at the Polk County Humane Society and is involved in various student organizations, including the Pre-Vet Club. She also competes in the rigorous three-day North American Hunting Retriever Association competition.

A recipient of the Albert Kopecky Family Scholarship and other student support, Tilleras hopes to go to vet school when she graduates. “It’s been my dream since I was 5 years old,” she says.

Start-up success

“A Lego creation,” says Tyler Ebert, a Carlson School of Management senior majoring in entrepreneurial studies. As director of the student-led business incubator Co-Lab, he helps fellow students take their start-up ideas to the next level, using a variety of proven methods—including brainstorming with Lagos.

Based in the new Travelers Innovation Lab at Northrop, Co-Lab has raised more than $300,000 and helped 16 student-run ventures get off the ground. Whether would-be entrepreneurs show up with a vague idea or a fully formed plan, Co-Lab’s student fellows help with everything from design advice to strategic business planning.

“I’ve had a lot of help from mentors at the University, and I wanted to find a way to start giving back,” says Ebert of his involvement in Co-Lab. “There are people who don’t have the opportunities I’ve had.”

Ebert is no stranger to making the most of business opportunities. He started his first venture, an online store he ran from his home in rural Wisconsin, when he was just 14. When he got to the U, he took on more complex management challenges at food service company Aramark Corp., where he began as a line cook and ended up starting four new restaurants and turning around 12 others.

In between taking classes and working at Aramark and Co-Lab, he also invented a recyclable and inexpensive beer keg made out of high-density polyethylene, sold the technology, and raised seed funds (the most ever by a U of M undergraduate) for a medical device company he intends to continue building after graduation.

A recipient of several scholarships, he’s grateful for the support that’s allowed him time to work on projects he’s passionate about. “I was able to spend my time figuring out what it took to get FDA approvals instead of worrying about how I was going to pay for my textbooks,” he says. “That peace of mind was big for me.”
Doing more in four

Fifteen years ago, the U of M had an unimpressive 30 percent four-year graduation rate and a 47 percent six-year graduation rate—the worst in the Big Ten. Today, 61 percent of University undergrads complete their degrees in four years and 80 percent within six years. Fewer years of college means less debt—in fact, four in 10 U of M students graduate with no debt. How did the U achieve this heartening uptick in graduation rates? Through doing more in four.

STUDENT SUPPORT
Introduced “credit banking” (all full-time students pay for 13 credits; everything above that is free), offered online graduation and advising tools, established a program for “under-resourced” students to help about 500 students each year with financial and academic assistance.

FINANCIAL AID
Built the U of M Promise Scholarship in 2007 to provide $50 million in aid for students from low- and middle-income families. Gifts from donors make a big difference, too—in the 2015 fiscal year, donors contributed $61 million in student support.

CULTURE SHIFT
Emphasized four-year graduation during Welcome Week, sent newsletters reminding students of the importance of graduating on time.

ADMISSIONS
Increased recruiting efforts based on statistics and other factors (such as leadership and volunteerism) in deciding who to admit; doubled the applicant pool from 20,000 to more than 46,000 in the freshman class of 2015.

Curriculum
Added additional sections of “bottleneck” classes (required courses that were hard to get into because of enrollment demands), trimmed excessive requirements in some majors, developed “program maps” showing how students could graduate in four years.

SAFER BRIDGES
Next time you drive over a Minnesota bridge, think of the U’s St. Anthony Falls Laboratory (SAFL), supported in part by gifts from donors. To help prevent bridge scour, which occurs when water erodes soil around a bridge’s foundations, the Minnesota Department of Transportation (MnDOT) is working with SAFL to develop better ways to monitor bridges. Instead of using portable monitoring equipment, which can be dangerous to deploy from a bridge deck or boat, researchers have installed fixed remote monitoring stations on six Minnesota bridges—and are learning lessons that will help keep the state’s bridges safe.

In the world of prosthetic devices, creating a fully functioning five-fingered robotic hand is the holy grail. It’s also been a passion of University of Minnesota Duluth electrical engineering professor Desineni Subbarao Naidu for years. “There is no other part of the human body that can do so many intricate operations as well as the hand can,” he says.

Naidu, who has held the Minnesota Power Jack Rowe Endowed Chair since 2014, used the chair’s funding to purchase equipment that continues research he started at Idaho State University. He works closely with undergraduate and graduate engineering students on his research, which uses 3-D printing, computing, and virtual reality technology to develop the robotic hand. Currently, the team is focusing on capturing electromyographic signals on the surface of the hand that are transmitted from the brain.

“I’m really excited about this research, but we needed a lot of funding to make it ready for commercialization,” says Naidu, who worked on robotic exploration for NASA’s Mars mission before becoming a professor. He aims to develop an affordable, accessible hand that will help wounded veterans and others regain the ability to manipulate objects and do other basic life tasks.

Give him a hand

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Repairing damaged skin today involves grafting from another part of a person’s body, which creates a new injury—and there are obvious limits to the amount of skin available. But now supported by a $2.4 million gift from the Richard M. Schulze Family Foundation, University of Minnesota researchers have set out to grow new skin using a few of a patient’s own skin cells. Genetic defects can be corrected in the cells, if necessary, and then reproduced on a biological scaffold to create a person’s own skin, which could replace skin lost due to burns, injuries, cancer therapies, or even birth defects.

U of M Stem Cell Institute director Jakub Tolar and his colleagues already have developed most of the steps in the process. Their next challenges are creating this biological scaffold and proving that the therapy is safe and effective.

“Cells are the powerful medicines of the future,” Tolar says. “By learning more about how to use their unique responsiveness to their environment, ability to be given a new purpose, and incredible specificity, we are moving toward the most important medical frontier of this century.”

MORE THAN SKIN DEEP
Skin is the body’s largest and most visible organ. It controls body temperature, keeps infection out, and provides us with crucial information about our environment. It can also be fragile. The same highly sensitive nerve endings that tell us about our surroundings make skin damage excruciatingly painful. Disfiguring injuries are often emotionally traumatic.

Printed with permission from Crossroads, MnDOT’s research blog.

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...—used with permission from Crossroads, MnDOT’s research blog.
Heartfelt friendships

If you’d met Kevin Herkenhoff, ’90 B.B.A., when he was a child, you’d never guess that he was born with a hole in his heart—or that at age 3, he was the youngest person ever to receive a Medtronic pacemaker. “He was in great shape,” says his sister, Mary Jo Cosio, who remembers him swimming and riding his bike. “His physical condition didn’t stop him.”

At Patrick Henry High School in Minneapolis, he competed on the debate team with a close-knit group of friends, many of whom joined him in attending the U of M. In their senior year of college, when he found out he had testicular cancer and was scheduled for surgery in Indiana the week before finals, those friends drove through three states to be with him.

As part of his recovery, Herkenhoff regularly walked around the University on the move and for a University on the black box flight recorder were invented right here at the University of Minnesota—perfect innovations for a University on the move and for a president who doesn’t mind putting on some miles.”

—U of M President Eric Kaler, speaking at the Presidents Club holiday party on December 9, 2015

Evidence or emotion?

Todd Tuttle, a surgical oncologist at the University of Minnesota since 2004, has watched with concern as rates for double mastectomies for women who have breast cancer continue to rise in the United States, despite increasing evidence that the procedure doesn’t improve survival. Last year Tuttle became the inaugural holder of the Regis Chair for Breast Cancer Research, an honor that infuses essential research dollars into the University’s ongoing efforts to battle breast cancer. We asked him to explain the double mastectomy phenomenon.

Why are so many patients who have cancer in only one breast opting to have both removed? I think the most likely reason women undergo double mastectomy is fear of recurrence and the hope that the procedure will improve their chances for long-term survival—and that concerns me. Other women are choosing double mastectomy followed by reconstruction surgery to ensure breast symmetry.

Double mastectomies don’t improve cancer survival rates? We now have strong data that shows that removing the second, healthy breast does not improve long-term survival. Most women with cancer in one breast greatly exaggerate their risk for developing cancer in the second breast, which is only about 4 to 5 percent after 10 years. The greater risk is in having the cancer spread to other parts of the body. So if they’re choosing double mastectomy for peace of mind, it’s a false peace of mind.

Is there any case in which it does make sense to opt for a double mastectomy? We often recommend double mastectomy for women who have been genetically tested and found to have the inherited gene mutations BRCA1 or BRCA2. But for the vast majority of women with breast cancer, there’s no medical benefit from double mastectomy.
Toxic secrets

“My DISCOVERY

Emily Strasser

August 6, 1945

Hiroshima, Japan, bomb explosion in formed by the atomic Mushroom cloud

Toxic secrets

MY DISCOVERY

Impact

The U of M School of Nursing celebrate the arrival of baby Emmett at 1:16 p.m. on July 15. Mother and baby are resting comfortably in the school’s simulation center.

What’s unusual about Emmett and his mother is that they’re not human, but birthing simulation mannequins meant to help nursing students practice essential skills.

“As a learner, I want to take every opportunity to practice so that I can provide my patients with the best care possible,” says Gina McBride, a midwifery student in the doctor of nursing practice (D.N.P) program.

The mannequins have more capabilities than the previous simulator students used. For instance, it’s now possible for someone to simulate the voice of the mother mannequin so students can practice their communication skills. In addition, since the baby has a simulated heart rate and other vital signs, studies can practice managing high-risk births.

HIVE OF ACTIVITY

Bee research at the U is buzzing right now, thanks to two new facilities that will allow researchers to study and promote bees and other pollinators.

The 10,000-square-foot Bee and Pollinator Research Lab on the St. Paul campus will allow U of M scientists to expand their internationally recognized research, while the Tashjian Bee and Pollinator Discovery Center at the Minnesota Landscape Arboretum will offer hands-on learning experiences for the public. The center will open this summer, and the research lab this fall. Both facilities are supported in part by private gifts.

FINDING THEIR CENTER

When University of Minnesota Masonic Children’s Hospital started offering regular yoga sessions for its behavioral health patients, it didn’t take long for caregivers to notice a huge difference. During therapy sessions right after they finished a Yoga Calm class, the teenagers were more relaxed, less anxious, and more focused.

“The biggest theme is, ‘I feel calmer, I feel better, I have hope, I love it,’” says Karen Wendt, program director of the behavioral health unit. “It’s been very powerful.”

Many of the kids in the hospital’s Child and Adolescent Mental Health and Intensive Treatment Center are grappling with anxiety, depression, psychosis, substance abuse, and other emotional and behavioral disorders. Staff at the center had heard of Yoga Calm’s success in Twin Cities schools, and they wanted to see if it would be effective for their patients.

Led by certified instructors, the program combines yoga movements with mindfulness, relaxation, emotional skill development, nervous system regulation techniques, and aromatherapy.

In 2010, the hospital started offering Yoga Calm weekly. Thanks to a $10,000 grant from Covidien Cares (the philanthropic arm of the medical device company recently acquired by Medtronic), the program expanded to twice-weekly sessions for adolescent patients on three units.

The hospital wants to offer daily sessions for behavioral health patients because it’s so effective. “That’s some of the feedback we’re getting from the kids: ‘We want more yoga,’” says Wendt.

Keeping it real

The purchase of the new birthing simulation mannequin was made possible by a generous gift from Lynette Thompson, a nurse whose husband was a neonatologist at the University of Minnesota.

“There is a huge menu of new learning opportunities,” says Melissa Avery, a professor at the School of Nursing. “Students can practice realistic emergency clinical scenarios in real time and be more prepared in a real clinical setting.”

“During World War II, my grandfather was a nuclear scientist in Oak Ridge, Tennessee, where the sole purpose was to build the atomic bomb. I went to Hiroshima for the 70th anniversary of the bombing to interview survivors and take part in commemoration events. After the bombing, there was a lot of stigma toward victims, so people spent decades in hiding or moved to other cities. I wanted to talk to people in Japan about why they kept their experiences secret for so long. I’m interested in the toxic legacy of secrecy on a family, national, and international level. What does it mean to work on atomic bombs but not be able to talk to your family about it?”

—Emily Strasser, graduate student in creative writing at the U of M’s College of Liberal Arts, recipient of a Walter H. Judd International Graduate & Professional Fellowship that allowed her to conduct research in Japan

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PHOTOGRAPHY © ISTOCKPHOTO/ANTAGAIN (BEE), © ISTOCK/PICTUREPARTNERS (CHILD), SCOTT STREBLE (BABY EMMETT)

WINTER 2016

LEGACY

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IMPACT
IN A PARTNERSHIP BETWEEN THE U OF M AND LOCAL SCHOOL DISTRICTS, AIDES WHO WORK WITH AT-RISK STUDENTS HAVE A NEW PATHWAY TO BECOMING TEACHERS

BY GAYLA MARTY

Karner Blue Education Center in Circle Pines, Minnesota, is a window on the future of special education. Though it’s only blocks from a busy freeway, its many windows look out on a wide meadow.

Inside this school named after an endangered butterfly, the spaces are spare and soothing, in colors of earth and sky. Karner Blue has four communities inspired by outdoor themes—Forest, Lake, River, and Prairie. One community serves only autism spectrum disorder (ASD) students, another a combination of ASD and emotional and behavioral disorders (EBD).

Brittany Beaudette is an educational assistant (EA) in the K–5 River community, whose students have severe behavioral problems. Beaudette, who has a bachelor’s degree in psychology, worked as an EA at another school for a year before moving to Karner Blue when it opened last fall.

The setting is different, and so is Beaudette. During the 2014–15 school year, she completed the first half of a two-year U of M master’s degree program in special education that is preparing her for teacher licensure in EBD. But she doesn’t drive to the U—the U comes to her district.

A CALL FOR HELP

Minnesota’s teacher shortage in special education is serious and growing, and Megan McAllister knows it firsthand. She is the staffing coordinator for District 916, which serves 12 member districts from Stillwater and Forest Lake to Fridley and Cottage Grove. It is one of three districts in Minnesota dedicated to providing highly specialized educational programs and services in a cost-effective way.

Last year, for example, District 916 served 400 students with EBD and ASD referred by other school districts. The number of students who need special education services has been growing so rapidly that 916 was able to make a clear case for building Karner Blue, designed specifically for that purpose.

Staffing schools is even harder than building them. In 2013, McAllister didn’t know how the district could keep up with its EBD staffing needs. One bright spot was the high-quality of its educational assistants, like Beaudette, who loved their jobs and excelled. But for those who wanted to advance into the teaching profession, it was almost impossible for them to go back to school to get the necessary degree and licensure without leaving their jobs.

McAllister wondered whether the U could bring its master’s program in emotional and behavioral disorders to the district so educational assistants could get licensure while staying in their jobs. She called Jennifer McComas, educational psychology professor at the U, who immediately started working out a plan to deliver the existing master’s degree curriculum in a
combination of formats—off-site lecture, online, and clinical observations—to the district. By the time the plan got approval from the Minnesota Board of Teaching in April 2014, word had spread.

When fall semester began five months later, the pilot cohort of new U students included 23 working professionals in five school districts.

**STRENGTH OF A COHORT**

Monday through Friday during the past school year, all 23 master’s students spent their days working as EAs with children and youth who had been removed from general education classrooms and schools because they were at risk of hurting themselves and others.

On Wednesday nights, the cohort came together for six hours of off-site classroom instruction, which included interactive role-playing activities that taught strategies they could take back to their classrooms. The rest of the weeknights and weekends, the students completed homework and online courses. And almost every week, they prepared for a classroom visit from their U instructors, who observed and coached them through a variety of new activities and methods.

**A GIFT TO STUDENTS**

With a background in criminal justice and law, GinaMarie Theesfeld began working as a special education assistant with sixth-graders at Sanford Middle School in Minneapolis, then moved with them as they advanced to Washburn High School. Now she’s watching those students graduate.

“We need more people in this field and more who are passionate about these students,” she says.

After six years as an educational assistant, Theesfeld wanted more. When her supervisor told her about the new U master’s program, she saw an opportunity to become a teacher.

Like many of her peers in the cohort, Theesfeld has juggled her job, family life, and school. But the balance has become part of her lesson plan. ‘This past year, watching someone like me work, be a parent, and be a student let my students see what that looks like for their future selves,’ says Theesfeld.

The program also gives educational assistants a strong message.

“It’s telling us, ‘We see you, and you are awesome!’” says Theesfeld. “This is a gift that the U and the districts are giving, opening up a program that gives us the tools to become really good at this work.”

**CELEBRATING SUCCESS**

It has been a successful pilot year, McComas and McAllister agree. They’ve worked through problems and made adjustments along the way. McAllister reports strong feedback from District 916 principals.

“These EAs have taken it to a new level and are now leaders within the program,” she says. “When you have a professor from the U in the building, it elevates the rest of the staff too.”

When asked about the program—biggest challenges, biggest positives—the students agree it has been tough. But they point to each other with smiles.

“Being part of the cohort is powerful,” says Beaudette. “We had a meeting to recruit the next cohort, and I got kind of emotional because I want others to have this.”

Gayla Marty is editor of Connect, where a version of this story originally appeared. The magazine is published by the U of M’s College of Education and Human Development.

“This is a gift that the U and the districts are giving, opening up a program that gives us the tools to become really good at this work.”

—GinaMarie Theesfeld, special education assistant

**SUPPORTING NEW TEACHERS**

Without a generous gift from the Bentson Foundation, it would have been difficult for graduate students like Brittany Beaudette and GinaMarie Theesfeld to reach their dream of earning special education teaching licenses while continuing to work as educational assistants.

“Supporting the M.Ed. residency program in special education aligned with our goals—gaining greater diversity among teachers in our public schools and supporting nontraditional students who really know what it means to be a special education teacher,” says Judi Dutcher, executive director of the Bentson Foundation.

The Bentson Foundation went further and created a second fund to support participants in the Minneapolis Residency Program, a yearlong co-teaching experience with summer U of M courses for Minneapolis Public School employees who wish to become elementary education teachers.

To support the two programs, the Bentson Foundation gave $812,000 to the U’s College of Education and Human Development.
After an eventful journey from the Minneapolis Sculpture Garden to the U of M’s Weisman Art Museum (WAM), including a tail injury and surgery, the iconic Standing Glass Fish looks right at home in the Karen Bachman and Robert Fisch Gallery. Created by WAM architect Frank Gehry in 1986, the sculpture is on long-term loan from the Walker Art Center.

1. WAM members get the inside scoop on how the fish was taken apart piece by piece, moved, cleaned, and carefully reassembled. Membership fees help fund everything from new exhibits to artwork maintenance.

2. As an E. Gerald and Lisa O’Brien Curatorial Fellow, graduate student Kate Heller will curate an upcoming show that explores contemporary artists’ response to the environmental and ecological changes facing the Mississippi River.

3. To make sure the process went swimmingly, local architects and curators worked with experts from Los Angeles who have special expertise in installing Gehry’s sculptures. Donor Jennifer Martin made a lead gift to support the installation.

4. WAM employs more than 70 U of M students, including junior Cora Nelson. These jobs are made possible in part by donor Daniel McFadden, who helps support student positions in art conservation, restoration, and curation.

5. In the Target Studio for Creative Collaboration, created in 2011 thanks to a generous gift from Target Corp., interdisciplinary teams of students and faculty from across the U work together on hands-on design projects.

For an interactive version of this photo, visit give.umn.edu/legacy.
Imagine this

By creating a way to move objects using brain waves, a U engineer’s work may bring new independence to people who have suffered brain or spinal cord injuries

By Nicole Endres

Moving an object using only your thoughts? The scientific community called it impossible. But not University of Minnesota biomedical engineering professor Bin He, who only “highly doubted” it could work.

“That didn’t stop him from trying,” says He, a big thinker with an active imagination who directs the U’s Center for Neuroengineering and Institute for Engineering in Medicine. “That’s exactly the type of thing you need to test out.”

He spent the early part of his career mapping brain waves, figuring out how to decode them to direct movement, and designing a brain-computer interface to make it happen. Then he started testing whether his study subjects, usually students, could perform simple tasks, such as moving a cursor from one side of a computer screen to the other, using only brain waves picked up by an electroencephalogram (EEG) cap.

He believed it should work, but he was always surprised when it did work. So he kept going. While other brain-computer interface researchers throughout the world were having success using a chip implanted inside the brain, He kept working on a noninvasive way to accomplish the same thing.

His team refined the technology until their study subjects could not only move a cursor on a screen but also fly a virtual reality helicopter—and then fly a real robotic helicopter in the real world.
“Even the small things would mean a tremendous amount in improving their quality of life.”

—from U of M neurosurgeon Andrew Grande

THE BRAIN BENEFITS, TOO

Moving objects with only the mind, as one might imagine, takes some training. (See sidebar.) But the payoff could be enormous. He and his colleagues believe that learning to use the brain-computer interface will not only offer the external benefits of being able to move an object using thought alone, but also help to re-form connections in the brain that have been damaged by a traumatic brain injury or a stroke, for instance.

“It’s internal modulation,” He says. “Treatment by the subject himself or herself.”

University neurosurgeon Andrew Grande recently collaborated with He on a study to find out whether people who have suffered a stroke could learn the brain-computer interface. Grande and He are now working with U of M physical therapy professor and stroke rehabilitation expert James Carey to find out if the brain-computer interface could move a quadcopter brain-computer interface.

“[This funding is] especially good for high-risk, high-reward investigations,” He says. “They may fail, but if you never try, you’ll never get there.”

What’s next for He? “Creating a thought-controlled prosthetic arm that could give paralyzed people more independence in their everyday lives. Just don’t tell him it’s impossible.”

Nicole Endres is a contributing editor for Legacy magazine.

TEACHING MIND CONTROL

Using only your thoughts to fly a robotic helicopter? It may sound intimidating, but it’s a learnable skill, says University of Minnesota biomedical engineer Bin He.

Some people can do it with very little training, for others, it will take longer. (He’s subjects spent an average of 5 hours and 20 minutes practicing movements in virtual reality before testing the real quadcopter.)

One of He’s studies suggests that practicing yoga and mindful meditation sharpen these mind-control skills and therefore allows people to master the brain-computer interface training exercises faster.

Study participants started out with a one-dimensional cursor task—imagining their hand guiding a cursor across a computer screen to an illuminated target. Those who mastered that skill advanced to a two-dimensional test, in which subjects imagined squeezing or curling their hands into fists to move the cursor up. They imagined releasing to move it back down.

From there, they progressed to flying a virtual helicopter to flying the real-world robotic quadcopter through rings in the University’s Cooke Hall gym.

Nicole Endres is a contributing editor for Legacy magazine.
True story
AN INNOVATIVE DIGITAL PROJECT COLLECTS AND PRESERVES
THE STORIES OF OUR COUNTRY’S NEWEST RESIDENTS
BY AMY SITZE

It’s not easy for U of M sophomore Thiago Heilman to tell his life story. As an undocumented immigrant for 16 years, he lived with the constant fear that he could be deported to his native Brazil—a country he’d left as a child—if his legal status were discovered. So when he produced a “digital story” (a three- to five-minute multimedia video that can include photos, music, and audio) as part of professor Erika Lee’s immigration history class, it felt “a little like being naked in front of a crowd,” says Heilman, who is now a legal U.S. resident through marriage. “A lot of my story is not stuff I would normally share with anyone.”

Heilman’s story is part of the Immigrant Stories initiative at the U of M’s Immigration History Research Center (IHRC). The project was started, says Lee, the center’s director and a professor in the College of Liberal Arts, as part of the IHRC’s ongoing mission to work with recent immigrants and refugees to preserve their histories.

The IHRC’s partner in the University Libraries, the Immigration History Research Center Archives, is renowned for its collection of materials on what Lee calls the “Ellis Island generation” of immigrants—those who came from Europe and the Middle East in the early 20th century. That strength is largely thanks to the IHRC’s former director, Rudy Vecoli, who spent 40 years building what is now North America’s largest repository of material about immigrant and refugee life. “He was known for going to immigrant communities all over the country and packing up his station wagon with materials to bring back,” says Lee, who holds the Rudolph J. Vecoli Chair in Immigration History.

But the experiences of post-1965 immigrants and refugees are not as well represented in immigration history, in part because today’s newcomers to the United States—such as those from the Hmong and Somali communities—are just now at the point where they’re starting to realize their stories are worth collecting and preserving, Lee says.

She knew the IHRC needed to better address these newer waves of immigration, but she wondered whether the old way of collecting and preserving history still worked today. “Is going out in a station wagon still the only model? Or can we use 21st century technology to document, collect, preserve, and share the experiences of the most recent immigrants and refugees?”

TELLING THEIR OWN STORIES
Out of these questions, Immigrant Stories was born. It’s a digital collection of more than 150 personal stories from about 40 communities, ranging from factual to deeply emotional. In one story, for example, Sahra Hassan shares scanned images of her Somali high school diploma and national identity card while talking about her journey from Somalia to Uganda and then to the United States. In another, Xai Phia Yang speaks directly to the camera in Hmong, with subtitles in English, as he describes fleeing war-torn Laos and studying to become a nurse in a refugee camp in Thailand.

“In the current debates about immigration, there are a lot of people talking about immigrants but very few opportunities for immigrants and refugees to tell their own stories and make their own choices about what they want to share,” says Lee.

From the project’s beginning in 2013 until now, people have participated in Immigrant Stories in three main ways by taking a class at a participating college (including the one Lee teaches at the U), attending public two-day workshops led by project manager
Elizabeth Venditto, or being a student in a participating adult English class in the Twin Cities. (See sidebar.) Though Venditto says she keeps the technology as simple as possible, creating a digital story still involves computer skills like typing a script, scanning documents, and adding music and a voiceover.

When she works with participants on their scripts, Venditto encourages them to focus on one object that symbolizes their journey. “It’s not your life story because you can’t describe your whole life in three minutes,” she says. Some participants choose physical objects like musical instruments or recipes, while others choose more abstract concepts like education.

When they’re finished creating their stories, participants in the class or workshop can choose to donate them to the Immigrant Stories online collection or keep them private.

**BIGGER AND BETTER**

Starting this year, Immigrant Stories is expanding outside of Minnesota, thanks to a National Endowment for the Humanities (NEH) grant that will fund a pilot project at six sites ranging from museums to schools to community organizations. The goal is to create a simple online platform to help people make and submit their own digital stories, for free, with tutorials that are accessible and easy to use.

The IHRC’s Discovery Fund, supported by gifts of all sizes, allows the center to do even more with Immigrant Stories. For example, Venditto would eventually like to create a curriculum that helps teachers use the stories when planning lessons about current immigration.

As it is, the collection is a rich source of information for researchers across the world and is already being used at museums outside of the U. Because all participants write scripts as part of the creation process, the stories are fully searchable—a researcher could search for ones that mention a specific refugee camp in Thailand, for example. “As a public research institution, the University of Minnesota leads in research, education, and community engagement, and this project has allowed us to do all three in innovative ways,” says Lee.

In addition to aiding researchers, Immigrant Stories helps the country’s newest residents understand that they’re part of the larger American story. “People sometimes say, ‘Well, my story isn’t important because I’m not rich and famous,’” says Venditto. “Telling their story validates their experiences.”

U of M student Heilman says that’s exactly how he felt when creating his story. “Now that I have my green card, I feel like I can tell my story, whereas before I didn’t know what would happen if I did,” he says. “My hope is that these stories can educate people and open minds.”

Amy Sitze is editor of Legacy magazine.

**COLORFUL THREADS**

Linda O’Malley was teaching an English class for adult language learners at the Ronald M. Hubbs Center for Lifelong Learning in St. Paul when she first heard about the U of M’s Immigrant Stories initiative. One of her goals for the advanced-level class was to create a close-knit community of writers, and she liked the idea of combining music, photos, and speech to create a “digital story.”

What she didn’t expect was that the impact of the month-long project would go far beyond developing valuable writing and software skills. Working with Elizabeth Venditto, project manager for Immigrant Stories, students began to realize that their stories mattered, says O’Malley.

“I think sometimes our students feel there’s a narrative they’re expected to tell: they left family, saw terrible things, arrived at a refugee camp and then came to America, and now everything is fine,” she says. “But that’s not always their story. This project helped them claim their own colorful thread in this tapistry of immigration.”

Some students did tell stories of life in refugee camps or the harrowing circumstances of war. Others, however, focused on stories that had nothing to do with immigration. One student, for example, chose to write about her relationship with her father. “She came out of a war-torn country so you’d think that would be her story, but her story is one of a daughter not telling her dad how much she loved him before he died,” says O’Malley. “It’s a human story.”

The difference between this project and similar writing assignments, she says, is that Venditto encouraged participants to use multimedia elements to bring their scripts to life: documents, photos, and even songs. “It was more than just producing a video or telling a story,” she says. “It became a story in itself of how this classroom became a community of writers and sharers of information.”

To learn more about this project, visit immigrantstories.umn.edu.

*Linda O’Malley teaches an English class for adult language learners at the Ronald M. Hubbs Center for Lifelong Learning in St. Paul.

Amy Sitze is editor of Legacy magazine.
At the University of Minnesota’s Owen H. Wangensteen Historical Library of Biology and Medicine, historic medical devices help students, researchers, and visitors learn about changes in health care through the centuries. “Learning about the histories of the health care issues we grapple with today can help us understand and perhaps solve some of the big problems of our times,” says curator Lois Hendrickson.

In addition to more than 80,000 rare books, the library has an artifact collection donated by Minnesota physicians and medical organizations. Gifts to the library support scholarship, education, exhibit development, preservation, and conservation.

To test your knowledge of historic medical devices, visit give.umn.edu/legacy.

**ELECTRO-MAGNET, CIRCA 1880.**
Owned by St. Paul doctor Frederick Van Slyke, this electro-magnet removed bits of metal from the eye. It contains a stand with a rheostat, which adjusted the strength of the magnetic field.

**WAX MODELS, 1922.** Wax teaching models of diseases, like this example from Austria showing skin rashes, became popular in the late 19th century.

**PNEUMOTHORAX APPARATUS, EARLY 20TH CENTURY.**
Henry L. Taylor, a key figure in developing tuberculosis treatment, used this lung-collapse device.

**YANKAUER ANESTHESIA MASK, CIRCA 1904.**
This mask was used to administer anesthetics such as chloroform or ether to patients.

**TEST FOR COLOR BLINDNESS, CIRCA 1870S TO 1910.**
This was the first test to standardize detection of color blindness in railway and shipping employees.